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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/512,145	02/23/00	ZHOU	Z 06816/089003

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2878	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/512,145	Applicant(s) ZHOU ET AL.	
	Examiner Thanh X Luu	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 April 2001* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-8,12-16 and 20* is/are rejected.

7)☒ Claim(s) *9-11 and 17-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This Office Action is in response to amendments and remarks filed April 18, 2001. Claims 2-20 are currently pending.

Terminal Disclaimer

2. The terminal disclaimer filed on April 18, 2001 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent 5,909,026 and U.S. Patent 6,057,539 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Objections

3. Regarding claim 15, line 14, "the circuit the circuit" is repeated twice.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 2 is rejected under 35 U.S.C. 102(b) as being anticipated by Wilder et al. (U.S. Patent 5,262,871).

Regarding claim 2, Wilder et al. disclose (see Figure 1) an adaptive programmable light imaging device comprising: an array of active pixel sensor pixels (10), each pixel producing a signal based only on the received radiation within the pixel; a plurality of programmable summation kernels (see column 5, lines 14-22, superpixels), each summation kernel programmable to selectively sum together a number of the pixels from the active pixel sensor; and a resolution control circuit (18), producing an output signal (resolution level control) which controls a size of the summation kernels between a minimum value kernel size and a maximum value kernel size; wherein the resolution control circuit (18) monitors a magnitude of a received signal level (16) from pixels and automatically changes the size of the summation kernels based on the signals from the pixels. Wilder et al. discloses automation because (see column 4, lines 54-66) a processor/computer outputs supervisory signals to change the size of the summation kernels (superpixels) based on results from the pixels. That is, the device of Wilder et al. is automated because human intervention is not required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 3-8, 13-16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilder et al. in view of Carbone et al. (U.S. Patent 5,717,199).

Regarding claims 16 and 20, Wilder et al. disclose (see Figure 6) in-pixel selection transistor (T_X or T_Y). Wilder et al. further disclose (see column 4, lines 55-60) first reading the array then changing the size of the summation kernel. Thus, a first frame is read and stored. It is inherent that only subsequent frames are affected by the control of the apparatus since the first frame is needed to establish an initial illumination state in the apparatus of Wilder et al. Wilder et al. do not explicitly disclose an in-pixel amplifier or a double sampling circuit. However, in-pixel amplifiers and double sampling circuits are notoriously well known in the art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide in-pixel amplifying and double sampling in order to reduce noise and improve detection in the apparatus of Wilder et al. Wilder et al. also fail to disclose detecting an illumination condition and controlling the size of the summation kernels based on the illumination condition. Carbone et al. disclose (see column 1, lines 9-18) summing pixels at low light levels in order to increase the signal level, reduce noise and increase readout speed. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to control the summation kernel size based on an illumination condition in the apparatus of Wilder et al. as disclosed by Carbone et al. to improve detection. Furthermore, the device of Wilder et al. is automated because human intervention is not required.

Regarding claim 12, Wilder et al. disclose (see Figure 1) an adaptive programmable light imaging device comprising: an array of active pixel sensor pixels (10), each pixel producing a signal based only on the received radiation within the pixel; a plurality of programmable summation kernels (see column 5, lines 14-22, superpixels), each summation kernel programmable to selectively sum together a number of the pixels from the active pixel sensor; and a resolution control circuit (18), producing an output signal (resolution level control) which controls a size of the summation kernels between a minimum value kernel size and a maximum value kernel size; Wilder et al. further disclose (see column 4, lines 55-60) first reading the array then changing the size of the summation kernel. Thus, a first frame is read and stored. It is inherent that only subsequent frames are affected by the control of the apparatus since the first frame is needed to establish an initial illumination state in the apparatus of Wilder et al. Wilder et al. do not disclose detecting an illumination condition and controlling the size of the summation kernels based on the illumination condition. Carbone et al. disclose (see column 1, lines 9-18) summing pixels at low light levels in order to increase the signal level, reduce noise and increase readout speed. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to control the summation kernel size based on an illumination condition in the apparatus of Wilder et al. as disclosed by Carbone et al. to improve detection.

Regarding claims 3, 4 and 6, Wilder et al. further disclose (see Figure 1) the resolution control circuit (18) includes a digital circuit (processor/computer). Wilder et al. fail to disclose detecting an illumination condition and controlling the size of the

summation kernels based on the illumination condition. Carbone et al. disclose (see column 1, lines 9-18) summing pixels at low light levels in order to increase the signal level, reduce noise and increase readout speed. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to control the summation kernel size based on an illumination condition in the apparatus of Wilder et al. as disclosed by Carbone et al. to improve detection. The minimum kernel size of Wilder et al. is one pixel since the pixel is the unit measure.

Regarding claim 5, the illumination condition is commonly measured by examination of the amplitude or magnitude of a signal. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to measure an illumination condition as claimed in the apparatus of Wilder et al. in view of Carbone et al. to correctly measure illumination.

Regarding claims 7 and 8, comparators having different thresholds are inherently present in the processor/computer of Wilder et al. in view of Carbone et al. to output respective signals. The manner in which the processing is conducted is a matter of design choice. Parallel processing is well known in the art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide parallel processing in order to decrease the processing time and improve detection in the apparatus of Wilder et al. in view of Carbone et al.

Regarding claims 13-15, Wilder et al. disclose (see Figure 6) a selection transistor (T_X or T_Y). Wilder et al. do not disclose a buffer. However, buffers in image read out circuits are notoriously well known. It would have been obvious to a person of

ordinary skill in the art at the time the invention was made to include a buffer transistor in the apparatus of Wilder et al. in view of Carbone et al. in order to provide more accurate and faster detection through buffers. Furthermore, the choice of calibration is a matter of design choice and is notoriously well known in the art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to calibrate the apparatus of Wilder et al. in view of Carbone et al. in order to provide consistent detection.

Allowable Subject Matter

8. Claims 9-11 and 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is an examiner's statement of reasons for allowance: an adaptive programmable light imaging device, more specifically, having a counter for counting a number of pixels which are in a specified illumination state and setting the summation kernel size based on the count in combination with the rest of the claimed invention is not disclosed or made obvious by the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

10. Applicant's arguments filed April 18, 2001 have been fully considered but they are not persuasive.

Regarding claims 2, 3 and 12, the device of Wilder et al. is automated since human intervention is not required.

Regarding claim 5, illumination condition is inherently judged from the output of a light detector.

Regarding claim 7, Applicant does not claim the comparators used as part of the resolution control circuit. Applicant simply claims the existence of comparators and different thresholds. A microprocessor or computer inherently contains comparators having different thresholds as claimed.

Regarding claim 12, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Regarding claims 15 and 16, calibration and double sampling circuits are notoriously well known and obvious as explained above.

Thus, the rejection set forth above is proper.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is (703) 305-0539. The examiner can normally be reached on Monday-Friday from 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seungsook Ham, can be reached on (703) 308-4090. The fax phone

number for the organization where the application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

txl
July 9, 2001

Que T. Le
Primary Examiner